

# PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### Equipment for Making Food Products

We, THE DISTILLERS COMPANY (YEAST) LIMITED, a British Company of Crown House, Morden, Surrey, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention is concerned with a method and equipment for making sausages and similar food products.

The usual method of making such products is to extrude a meat composition of suitable consistency through a die into a tubular skin container which may be natural or synthetic. It has also been proposed to coat the extruded meat with a solidifiable liquid, and then to effect the solidification of the liquid coating to form a skin in situ.

It is an object of this invention to provide a method for making sausages which is suitable for use on the small scale for instance in laboratory or experimental work or by the family butcher, because it is inexpensive, easy to operate and gives a good product.

According to the invention the method for making sausages comprises extruding a meat mixture of suitable consistency and composition into a trough through which a solution of or containing an alginate is caused to flow, cutting the extruded length in the trough into sausage lengths, tipping the contents of the trough into a tray placed beneath it, recirculating the alginate from the bottom of the tray to the trough, the levels of liquid in the trough and tray being such that the lengths of sausage meat are completely coated with liquid, transferring the thus coated sausage lengths into a bath of or containing a solution of a soluble calcium salt such as calcium chloride, and after a short time washing the sausage lengths thus coated with solid calcium algin-

[Price 5s. 0d.]

ate in water until they are free from residual calcium chloride, sodium chloride or alginate, and thereafter drying. The alginate may be any water-soluble salt for instance the sodium salt.

The trough can be of any desired length but for ease of handling the sausage products, a length of about 3 feet is suitable. It is of U cross-section and of sectional dimensions such that the extruded sausage mixture can be entirely submerged in the liquid passed into it. If the extruded sausage meat is about 1.5 inches in diameter, the width of the section of the trough would suitably be about 2 inches. Preferably at one end is a hole through which the extruding nozzle is inserted. At the other end the level of the wall is a little lower than that of the sides of the trough, so that the liquid will overflow at that point into the tray below. That end of the trough can conveniently be supported by the tray, and the trough should slope slightly towards that end.

Cutting the extruded length can be done in any convenient way, manually or mechanically. If the former, the trough is conveniently marked to show the cutting points to give sausages of equal lengths.

The tray is preferably much larger than the trough so that when the trough is inverted all the contents including splashes will be caught in the tray.

The tray either has a sloping bottom surface leading to an outlet point through which the alginate solution drains to a container from which it is pumped back to the trough or it is caused to slope for example to one corner from where the alginate solution is removed in a similar manner. If it is not desired to use a pump, a number of containers can be used to receive the liquid drained from the tray and when one is full it can be replaced by another and transferred to a

position well above the trough and connected to piping so that alginate solution flows from the container to the trough as desired. The alginate solution preferably enters the trough from orifices in a tube located above the extrusion nozzle, so that the alginate flows over the sausage meat as it is extruded. A suitable alginate solution is made by dissolving  $2\frac{1}{2}$  to 3 ounces of sodium alginate per gallon of water. The resulting solution is a fairly viscous liquid.

The sausage lengths are transferred from the alginate contained in the tray into a bath or bowl containing aqueous calcium chloride solution. Suitable strength of the solution is obtained by dissolving one pound of calcium chloride per gallon of water. The sausages need only stay in the calcium chloride solution for 20 or 30 seconds after which they are washed in water until they are sufficiently free from the treating liquids. Drying can be effected at slightly elevated temperatures in a drying oven or at room temperature as desired.

The accompanying drawing illustrates in Figure 1 an end view and in Figure 2 a side view of suitable equipment for carrying out the method of this invention.

In this equipment sausage meat is extruded through an extruder 1 into a trough 2. Beneath the trough and extruder is a tray 3. Both the trough and tray are slightly sloping but in opposite directions. Beneath the tray is container 4 for holding a reservoir of an aqueous sodium alginate solution. In operation the sodium alginate solution is forced by pump 5 from the container 4 to a spray nozzle 6 which sprays it over the sausage meat as it is extruded into the trough which is full of the same solution. It overflows from the trough into the tray beneath it and thence into the container 4.

When the trough 2 has a length of extruded sausage meat in it the length is cut to form individual sausage lengths and then the whole contents or the trough 2 are tipped into the tray 3. The liquid alginate solution drains away into the container 4 and the coated sausage lengths are transferred to other vessels for treatment with calcium chloride solution and washing liquids.

#### WHAT WE CLAIM IS:—

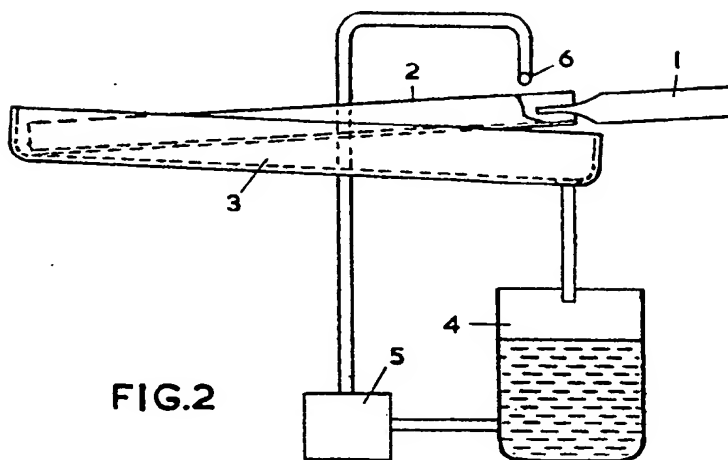
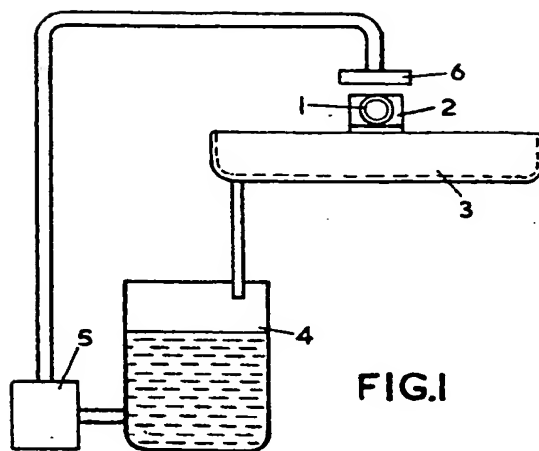
1. A method for making sausages which comprises extruding a meat mixture of suitable consistency and composition into a trough through which a solution of or containing an alginate is caused to flow, cutting the extruded length in the trough into sausage lengths, tipping the contents of the trough into a tray placed beneath it, recirculating the alginate from the bottom of the tray to the trough, the levels of liquid in the trough and tray being such that the lengths of sausage meat are completely coated with liquid, transferring the thus coated sausage lengths into a bath of or containing a solution of a soluble calcium salt such as calcium chloride, and after a short time washing the sausage lengths thus coated with solid calcium alginate in water until they are free from residual calcium chloride, sodium chloride or alginate, and thereafter drying.

2. A method for making sausages as claimed in claim 1 wherein the alginate solution drains from the tray into a container from which it is pumped to a spray nozzle located over the extrusion nozzle.

3. Equipment for carrying out the method of making sausages substantially as described with reference to and as illustrated in the accompanying drawing.

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